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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/763,791	01/23/2004	Mei Chen	200312428-1	7930

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EXAMINER	
TSAI, TSUNG YIN	
ART UNIT	**PAPER NUMBER**
2609	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	03/01/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/763,791	CHEN, MEI	
	Examiner	Art Unit	
	Tsung-Yin Tsai	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/6/2005 and 1/23/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

(1) Page 10, lines 18-21 cited copending US Application 10/687,681.

(2) The following paper is attach to one of the IDS. "Motion-Based Object Detection and Tracking in Color Image Sequences" by Bernd Heisele is the paper what is attach to the "Feature-Based Cluster Segmentation of Image Sequences" by Ohm disclose by the IDS. Paper by Heisele is not disclosed in the IDS, however, the examiner will use this as a NPL in this office action.

Specification

2. The abstract of the disclosure is objected to because it includes improper language, such as "describe". Correction is required. See MPEP § 608.01(b).

Claim Objections

3. Claims 1-30 are objected to because of the following informalities:

(1) Regarding claim 5 line 2, where cited "between a motion cluster" replace with --between the motion cluster--.

(2) Regarding claim 5 line 3, where cited "motion cluster in a neighboring" replace with --motion cluster in the neighboring--.

(3) Regarding claim 8 line 1, where cited "selecting a motion cluster as a" replace with --selecting the motion cluster as the--.

(4) Regarding claim 9 line 1, where cited "motion cluster selected as a" replace with --motion cluster selected as the--.

(5) Regarding claim 15 line 2, where cited "between a motion cluster" replace with --between the motion cluster--.

(6) Regarding claim 15 line 3, where cited "motion cluster in a neighboring" replace with --motion cluster in the neighboring--.

(7) Regarding claim 18 line 1, where cited "selects a motion cluster as a" replace with --selects the motion cluster as the--.

(8) Regarding claim 19 line 1, where cited "motion cluster selected as a" replace with --motion cluster selected as the--.

(9) Regarding claim 25 line 2, where cited "degree of overlap between a" replace to --degree of overlap between the--.

(10) Regarding claim 25 line 3, where cited "image frame and a" replace with --image frame and the--.

(11) Regarding claim 28 line 2, where cited "machine to select a motion cluster as a motion" replace with --machine to select the motion cluster as the motion--.

(12) Regarding claim 29 line 2, where cited "machine to select as a motion" replace with --machine to select as the motion--.

Claim Rejections – 35 USC 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1, 10-11, 20-21 and 30 are rejected under 35 U.S.C. 102(b) as being Wang et al (US Patent Number 5,557,684. IDS).

Wang et al disclose the following method carry out by a system:

(1) Regarding claims 1, 11 and 21:

computing respective sets of motion vectors for pairs of image frames (20-22 figure 3);

classifying the computed motion vectors into motion classes (figure 3, figure 8a-8b, column 5 lines 15-67 to column 6);

identifying motion clusters in the image frames based at least in part on the motion classes (figure 3, figure 8a-8b, column 5 lines 15-67 to column 6); and

selecting an identified motion cluster as a motion stabilization reference based on spatiotemporal consistency of the selected motion cluster across multiple image frames (figure 3, figure 8a-8b, column 5 lines 15-67 to column 6).

(2) Regarding claims 10, 20 and 30:

further comprising stabilizing the sequence of image frames with respect to a motion model computed for the motion cluster selected as the motion stabilization reference.

(column 3 lines 40-57)

Claim Rejections – 35 USC 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 8-9, 18-19 and 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US Patent Number 5,557,684. IDS.) in view of Heisele (Motion-Based Object Detection and Tracking in Color Image Sequences.).

Wang et al disclose the following above except:

(1) Regarding claims 8, 18 and 28:

wherein selecting a motion cluster as a motion stabilization reference comprises projecting each motion cluster from image frames to respective neighboring image frames, and computing respective measures of spatiotemporal consistency for the projected motion clusters.

However, Heisele in the same field of endeavor disclose wherein selecting a motion cluster as a motion stabilization reference comprises projecting each

motion cluster from image frames to respective neighboring image frames, and computing respective measures of spatiotemporal consistency for the projected motion clusters (page 2 left column lines 23. A consistent segmentation results over time is seen as the reference motion cluster over the image framesd.).

It would have been obvious to one skill in the art at the time of the invention to employ Heisele's teachings to Wang et al wherein selecting a motion cluster as a motion stabilization reference comprises projecting each motion cluster from image frames to respective neighboring image frames, and computing respective measures of spatiotemporal consistency for the projected motion clusters; such that the reference cluster will reduce the complexity and burden of the processor in process and data storage.

(2) Regarding claims 9, 19 and 29:

wherein the motion cluster selected as a motion stabilization reference for a given reference image frame has a greater spatiotemporal consistency measure than other motion clusters across multiple image frames neighboring the given reference image frame.

However, Heisele in the same field of endeavor disclose wherein the motion cluster selected as a motion stabilization reference for a given reference image frame has a greater spatiotemporal consistency measure than other motion clusters across multiple image frames neighboring the given reference image frame (page one, right column lines 14-25. Even with the reduction of data from this method it stills generate more motion data across the images.).

It would have been obvious to one skill in the art at the time of the invention to employ Heisele's teachings to Wang et al wherein the motion cluster selected as a motion stabilization reference for a given reference image frame has a greater spatiotemporal consistency measure than other motion clusters across multiple image frames neighboring the given reference image frame; such that not only does smaller data storage is required, but more information is generated from such small amount of data.

8. Claims 2-6, 12-16 and 22-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US Patent Number 5,557,684. IDS) in view of Ohm (Feature-Based Cluster Segmentation of Image Sequences. IDS.)

Wang et al disclose all of the above except for the following:

(1) Regarding claims 2, 12 and 22:

wherein computing motion vectors comprises generating for pairs of image frames respective dense motion models describing motion at pixel locations with respective sets of parameter values in a motion parameter space.

However, Ohm in the same field of endeavor disclose wherein computing motion vectors comprises generating for pairs of image frames respective dense motion models describing motion at pixel locations with respective sets of parameter values in a motion parameter space (page 2, right column, paragraph "3 Weighting of feature" lines 1-7)

It would have been obvious to one skill in the art at the time of the invention to employ Ohm's teachings to Wang et al wherein computing motion vectors comprises generating for pairs of image frames respective dense motion models describing motion at pixel locations with respective sets of parameter values in a motion parameter space; such that it will be a efficiency use of processing image and smaller storage space. This will further be a more accuracy way of calculating motion vectors or image frames.

(2) Regarding claims 3, 13 and 23:

wherein identifying motion clusters comprises iteratively clustering motion vectors from a coarse image frame resolution level to a fine image frame resolution level.

However, Ohm in the same field of endeavor disclose wherein identifying motion clusters comprises iteratively clustering motion vectors from a coarse image frame resolution level to a fine image frame resolution level (page 2 paragraph "3 Weighting of features", page 3 paragraph "6 Results", page 3 paragraph "7 Conclusion").

It would have been obvious to one skill in the art at the time of the invention to employ Ohm's teachings to Wang et al wherein identifying motion clusters comprises iteratively clustering motion vectors from a coarse image frame resolution level to a fine image frame resolution level; such that when viewing the progression of the frames one can see smooth, pure translation motion and not the jerky or blurry image frames.

(3) Regarding claims 4, 14 and 24:

wherein at each image frame resolution level motion vectors are classified into motion clusters, and spatiotemporal consistency is determined for each cluster in a given image frame based on a projection of the motion cluster into a neighboring image frame using computed inter-frame motion.

However, Ohm in the same field of endeavor disclose wherein at each image frame resolution level motion vectors are classified into motion clusters, and spatiotemporal consistency is determined for each cluster in a given image frame based on a projection of the motion cluster into a neighboring image frame using computed inter-frame motion (figure 2 of page 3, page 3 paragraph "4 Segment merging based on local feature analysis").

It would have been obvious to one skill in the art at the time of the invention to employ Ohm's teachings to Wang et al wherein at each image frame resolution level motion vectors are classified into motion clusters, and spatiotemporal consistency is determined for each cluster in a given image frame based on a projection of the motion cluster into a neighboring image frame using computed inter-frame motion; such that when viewing the progression of the frames one can see smooth, pure translation motion and not the jerky or blurry image frames. This will further be a more efficiency use of processing time of calculating motion vectors or image frames.

(4) Regarding claims 5,15 and 25:

wherein the spatiotemporal consistency is determined based on degree of overlap between a motion cluster projected from the given image frame and a corresponding motion cluster in a neighboring image frame.

However, Ohm in the same field of endeavor disclose wherein the spatiotemporal consistency is determined based on degree of overlap between a motion cluster projected from the given image frame and a corresponding motion cluster in a neighboring image frame (figure 2 of page 3, page 3 paragraph "4 Segment merging based on local feature analysis" and "5 Segment tracking").

It would have been obvious to one skill in the art at the time of the invention to employ Ohm's teachings to Wang et al wherein the spatiotemporal consistency is determined based on degree of overlap between a motion cluster projected from the given image frame and a corresponding motion cluster in a neighboring image frame; such since this process is done already and the data storage, it will allow less processor time for the processor to execute the data when access by the user.

(5) Regarding claims 6, 16 and 26:

wherein motion vectors are re-classified with a modified clustering parameter in response to a determination that a computed spatiotemporal consistency measure is below a consistency threshold.

However, Ohm in the same field of endeavor disclose wherein motion vectors are re-classified with a modified clustering parameter in response to a determination that a computed spatiotemporal consistency measure is below a

consistency threshold (figure 2 of page 3, page 3 paragraph "4 Segment merging based on local feature analysis" and "5 Segment tracking").

It would have been obvious to one skill in the art at the time of the invention to employ Ohm's teachings to Wang et al wherein motion vectors are re-classified with a modified clustering parameter in response to a determination that a computed spatiotemporal consistency measure is below a consistency threshold; such since this process is done already and the data storage, it will allow less processor time for the processor to execute the data when access by the user.

9. Claims 7, 17 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wang et al (US Patent Number 5,557,684. IDS) in view of Ohm (Feature-Based Cluster Segmentation of Image Sequences. IDS.) as applied in claims 3,13 and 23 above, and further in view of Heisele (Motion-Based Object Detection and Tracking in Color Image Sequences).

Wang et al and Ohm disclose all the above except the following:

(1) Regarding claims 7, 17 and 27:

wherein motion vectors are clustered iteratively in accordance with a clustering method.

However, Heisele in the same field of endeavor disclose wherein motion vectors are clustered iteratively in accordance with a clustering method (abstract,

page 1 paragraph "1. Introduction", page 1 right column lines 14-40 to page 2 left column lines 1-11, page 2 paragraph "2. Motion Estimation by Clustering").

It would have been obvious to one skill in the art at the time of the invention to employ Heisele's to Wang et al and Ohm wherein motion vectors are clustered iteratively in accordance with a clustering method; such that the clustering procedure will make it easier for the processor to process groups of pixels than individual pixels, thus lower the burden of the processor and creating faster display of the image.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Ishii et al (US Patent Number 5,053,875) disclose fluctuation stabilization image pickup device.

Schonfeld et al (US Patent Number 7,142,600) disclose Occlusion/disocclusion detection using K-means clustering near object boundary with comparison of average motion of clusters to object and background motions.

Cornog et al (US Patent Number 7,043,058) disclose correcting motion vector maps for image processing.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsung-Yin Tsai whose telephone number is (571) 270-1671. The examiner can normally be reached on Monday - Friday 8 am - 5 pm ESP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on (571) 272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Tsung-Yin Tsai
February 21, 2007

SHUWANG LIU
SUPERVISORY PATENT EXAMINER